

L 01280-66 EMT(m)/EPF(c)/EMP(j) RM

ACCESSION NR: AP5020791

UR/0048/65/029/008/1317/1320

AUTHOR: Naboykin, Yu. V.; Sidorov, S. V.

TITLE: Polarization of the luminescence of naphthalene in the benzophenone lattice [Report, 13th Conference on Luminescence held in Khar'kov 25 June to 1 July 1964]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1317-1320

TOPIC TAGS: polarized luminescence, luminescent crystal, organic crystal, crystal orientation, laser optic material

ABSTRACT: The polarization of the luminescence of naphthalene molecules in benzophenone crystals was investigated in order to determine the orientation of the foreign molecule in the crystal lattice. The investigation was undertaken in part because of the possible technical importance of the material for use in lasers. The crystals were grown by the method of A.A.Chumakov (Sb. Rost kristallov, vol.2, p. 109. Izd. AN SSSR, M., 1959) from solutions of 30 g benzophenone and 3 g naphthalene in 375 cc of isooctane. Samples cut parallel to a number of different crystallographic planes were investigated. The sample was illuminated obliquely, and the fluorescence leaving the sample at right angles to the surface was examined

Card 1/3

L 01280-66

ACCESSION NR: AP5020791

3

with a polaroid analyzer, a monochrometer and a photomultiplier. The sample could be cooled to 80°K. Correction was made for the polarization introduced by the apparatus; this was determined by examining a piece of ground glass located at the sample position and illuminated from behind. Polarization introduced by double refraction in the sample was negligible. From an analysis of the polarization of the naphthalene luminescence in differently oriented crystals it was found that the triplet-singlet oscillator in the naphthalene molecule in the crystal is parallel to the intersection of two planes of which one is perpendicular to the (110) plane and makes an angle of 20° with the [001] direction and the other is perpendicular to the (001) plane and makes a minimum angle of 52° with the [010] direction. The oscillator is nearly perpendicular to the (001) plane. There are (undisclosed) indications that, contrary to the opinion of R. Williams (J. Chem. Phys., 30, 233, 1959), the oscillator for the triplet-singlet transition in naphthalene is perpendicular to the plane of the molecule. "In conclusion, the authors express their gratitude to L.N. Ovchinnikova for assistance with the work." Orig. art. has: 3 figures. 44,55

Card 2/3

L 01280-66

ACCESSION NR: AP5020791

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: SS, CP

NO REF SOV: 004

OTHER: 005

Card 3/3

SIDOROV, T. A., Engineer

"Stationary Depots." Sub 21 Dec 51, Military Red Banner Engineering Academy imeni  
V. V. Kuybyshev

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

SIDOROV, T.A.; SOBOLEV, M.N.

Isotope shift and its structure in the infrared spectrum of boric acid. Opt. i spektr. 1 no.3:393-402 J1 '56. (MLRA 9:11)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.  
(Boric acid--Spectra)

PRIKHOV'KO, A F  
24(7) 13  
L'vov. Universitet  
PHASE I BOOK EXPLOITATION SOV/1365  
Materialy I Vsesoyuznogo nauchnogo konfereitsa po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Ita: Fizichnyy sbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Jazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Lapidarskiy, G.S., Academician (Resp. Ed., Deceased), Noporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabelinskiy, V.A., Doctor of Physical and Mathematical Sciences, Kornitavskiy, V.D., Candidate of Physical and Mathematical Sciences, Candidate of Physical and Mathematical Sciences, Klimovskiy, L.N., Candidate of Physical and Mathematical Sciences, Milyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Olshchuk, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Sidorov, T.A., and N.M. Sobolev. Infrared Spectra and the Structure of Phosphoric Acid, Phosphoric and Boric Anhydrides

Babushkin, A.B., A.V. Uvarov, and L.A. Ignat'yeva. Infrared Spectroscopic Study of the Adsorption and Surface Reactions of Ethyl and Methyl Alcohols on Aluminum Oxide

Sidorov, A.M. Study of Adsorption on Porous Glass by Means of Infrared Absorption Spectra

Belen'kiy, L.I., M. Ye. Kazanskaya, et al. Spectrophotometric Study of Vat Soils

Sidorov, T.A., and N.M. Sobolev. Isotopic Shift in the Infrared Spectrum of Boric Acid, and Its Structure

Sheynker, Yu. M. Spectra and Tautomerism of Aroylated Heterocyclic Amines

Postovskiy, I. Ya., Yu. M. Sheynker, and N.P. Kasarinova. Spectroscopic Study of 9-oxoarylaeridines

Card 12/30

SIDOROV, T. A., Cand of Phys-Math Sci -- (diss) "Infra-red spectra and structure of certain glass-producing oxidizers." Moscow, 1957, 10 pp (Physics Institute im P. N. Lebedev), 125 copies (KL, 35-57, 105)

SIDOROV, T. A.

51-6-5/26

AUTHORS: Sidorov, T. A. and Sobolev, N. N.

TITLE: Infrared Spectrum and Molecular Structure of Phosphorus Trioxide. (Infrakrasnyy spektr i struktura molekuly fosforistogo angidrida.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.II, Nr.6, pp. 710-716. (USSR)

ABSTRACT: Infrared spectrum of phosphorus trioxide ( $P_2O_3$ ) was studied in the region from 2.5 to  $24\mu$ . The trioxide was prepared using the method of Thorpe and Tutton (Ref.1). During preparation the trioxide was placed in a current of carbon dioxide to prevent attack by oxygen and moisture of the atmosphere. The measurements were made on liquid trioxide. The liquid was prepared by melting a piece of trioxide between two plates of KI. The spectrum was measured using a double-beam infrared spectrometer described in Ref.5. A 'Silit' resistor heated to about  $1000^\circ C$  was used as the source of light. A blackened bismuth bolometer was used as a detector. The measured infrared spectrum

Card 1/3

... can be



Infrared Spectrum and Molecular Structure of Phosphorus Trioxide. 51-6-5/26

satisfactorily interpreted only by using a molecular model of  $P_4O_6$  belonging to the point-group  $T_d$ . These conclusions are in full agreement with electron diffraction studies of phosphorus trioxide vapours (Ref.2). There are 2 figures, 3 tables and 6 references, 2 of which are Slavic.

SUBMITTED: November 10, 1956.

AVAILABLE: Library of Congress.

Card 3/3

. SIDOROV, T. A.

51-6-3/25

AUTHORS: Sidorov, T. A., and Sobolev, N. N.

TITLE: Infrared and Raman Spectra of Boron Oxide.  
(Infrakrasnyy i kombinatsionnyy spektry bornogo angidrida.)  
II. Infrared Spectrum and Structure of the Boron Oxide  
Molecule. (II. Infrakrasnyy spektr i struktura molekuly  
bornogo angidrida.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. III, Nr. 6,  
pp. 560-567. (USSR)

ABSTRACT: The preceding paper (Ref.1) reported the results on the  
Raman spectrum of glassy boron oxide. The present and  
subsequent papers report measurements of the infrared  
spectrum and interpret the vibrational spectrum of the  
same substance. The infrared spectrum was obtained  
in the region 2.5 - 24  $\mu$  for the usual glassy boron  
oxide and for the same oxide enriched with B<sup>10</sup>, using  
a double-beam spectrometer described in Ref.3. ▲  
monochromator of a VKC-11 spectrometer with NaCl and  
KBr prisms was used. A "silit" rod heated to 1000°C  
was used as the infrared source. The absorption

Card 1/4

## Infrared and Raman Spectra of Boron Oxide. II.

51-6-3/25

spectra were recorded using a blackened bismuth bolometer. Chemically pure boron oxide was used. Oxide enriched with  $B^{10}$  was produced by prolonged heating of enriched boric acid in vacuum. By drawing thin layers from the melt a glassy substance was obtained. These layers were about  $1 \mu$  thick and  $2 \times 3 \text{ cm}^2$  in area. The form of the spectrum depended strongly on the time the layer (film) was kept in air. Fig. 3 shows six different absorption spectra obtained after 0 - 48 hours in air. To avoid the effect of atmospheric moisture and to make the samples as small as possible a different method was used. After heating to  $1000^\circ\text{C}$  to remove water, the oxide temperature was increased to  $2000^\circ\text{C}$  and a film of oxide was evaporated on a KBr plate. To study weak absorption bands 0.02 mm films were prepared. The usual boron oxide studied had 18.83%  $B^{10}$  and 81.17%  $B^{11}$ . The enriched oxide had 71%  $B^{10}$ . The infrared spectra of these oxides are given in Figs. 1 and 2 respectively. Boron oxide (Fig. 1 and Table 1) has three strong absorption bands at  $1330$ ,  $1260$  and  $718 \text{ cm}^{-1}$ . These bands exhibit

Card 2/4

51-6-3/25

## Infrared and Raman Spectra of Boron Oxide. II.

strong absorption even in  $1\ \mu$  films. There are also some frequencies at which absorption is noticeable only in layers  $20\ \mu$  thick. The  $1260$  and  $718\ \text{cm}^{-1}$  bands exhibit isotopic displacement by  $21$  and  $6\ \text{cm}^{-1}$  respectively (Fig.2 and Table 1). The infrared spectra of boron oxide films evaporated in vacuum, and all layers prepared by drawing from melt (not exposed to air) were found to be almost identical. According to Zachariasen (Ref.9), boron oxide has coordinational structure in which there are no separate molecules, but according to Fajans and Barber (Ref.10), this oxide consists of molecules which are bound together by considerable intermolecular forces. The present authors favour the molecular structure hypothesis. Table 2 collects the Raman (cols. 1 and 2) and infrared (cols. 3 and 4) spectra of boron oxide. Of these,  $1330$ ,  $1260$  and  $718\ \text{cm}^{-1}$  frequencies of the infrared spectrum are regarded as fundamental. In the Raman spectrum the eight strong or medium frequencies are regarded as fundamental ( $470$ ,  $508$ ,  $670$ ,  $725$ ,  $808$ ,

Card 3/4

51-6-3/25

Infrared and Raman Spectra of Boron Oxide. II,

1260, 1330 and 1500  $\text{cm}^{-1}$ ). Tables 3 and 4 give various possible symmetry groups of the boron oxide molecule. From the data of these two tables, the authors conclude that only the  $\text{B}_4\text{O}_6$  model of the oxide molecule and  $T_d$  symmetry agree reasonably well with experiment. There are 3 figures, 4 tables and 11 references, of which 6 are Russian, 4 English and 1 German.

ASSOCIATION: Physical Institute imeni P.N. Lebedev, Academy of Sciences of the USSR. (Fizicheskiy institut im. P.N. Lebedeva AN SSSR.)

SUBMITTED: February 28, 1957.

AVAILABLE: Library of Congress.

Card 4/4

SIDOROV, T. A.

30-58-4-30/44

AUTHOR: None Given

TITLE: Dissertations (Dissertatsii).  
Branch of Physico-Mathematical Sciences  
(Otdeleniye fiziko-matematicheskikh nauk).  
July-December 1957 (Iyul'-Dekabr' 1957)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 4,  
pp. 116-116 (USSR)

ABSTRACT: 6) At the Institute for Physics imeni P. N. Lebedev  
(Fizicheskiy Institut imeni P. N. Lebedeva) the following  
dissertations were defended:  
a) for the degree of a Doctor of Physico-Mathematical  
Sciences: B. M. Kozyrev - Experimental Investigations  
in the Field of Paramagnetic Resonance. (Eksperimental'nyye  
issledovaniya v oblasti paramagnitnogo rezonansa).  
I. L. Rozental' - On Nuclear Interactions of Particles  
With High Energy. (O yadernom vzaimodeystvii chastits  
bol'shoy energii).  
b) for the degree of a Candidate of Physico-Mathemati-  
cal Sciences:

Card 1/2

Dissertations. Branch of Physico-Mathematical  
Sciences. July-December 1957

30-58-4-30/44

A. V. Antonov - Investigation of Diffusion Processes and  
of Neutron Retardation in Different Milieus and of the  
Multiplication of Neutrons in Heterogeneous Uranium-  
Graphite Systems by Means of the Impulse Method.  
(Issledovaniye protsessov diffuzii i zamedleniya neytronov  
v razlichnykh sredakh i mul'tiplikatsii neytronov v uran-  
grafitovykh geterogennykh sistemakh s pomoshch'yu impul'-  
snogo metoda).

T. A. Sidorov - Infrared Spectra and the Structure of Some  
Vitrifying Oxides. (Infrakrasnyye spektry i struktura ne-  
kotorykh stekloobrazuyushchikh okislov).

M. I. Tret'yakova - Determination of the Mass of Slow  
Charged Particles in Photographic Plates. (Opredeleniye  
massy medlennykh zaryazhennykh chastits v fotoplastinkakh),

1. Physics—Bibliography    2. Bibliography—Physics

Card 2/2

51-4 -1-2/26

AUTHORS: Sidorov, T. A. and Sobolev, N. N.

TITLE: The Infrared and Combination Spectra of Boron Oxide  
III. Interpretation of the Vibrational Spectrum of  
Boron Oxide and Calculation of the Isotopic Effect.

(Infrakrasnyy i kombinatsionnyy spektry bornogo  
angidrida. III. Interpretatsiya kolebatel'nogo  
spektra bornogo angidrida i raschet izotopicheskogo  
effekta.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol. IV, Nr. 1,  
pp. 9-16. (USSR)

ABSTRACT: In the preceding two parts (Ref.1) it was shown that  
a molecule of boron oxide has the formula  $B_4O_6$  and  
belongs to the symmetry point-group  $T_d$ . Structure  
of such a molecule is shown in Fig.1. Atoms of  
boron are at the vertices of a tetrahedron, and atoms  
of oxygen are on straight lines joining the centre of  
the tetrahedron with centres of the sides of the tetra-  
hedron. Due to the high symmetry of the molecule,  
Card 1/7 24 of its normal vibrations degenerate to 10. The



51- 4-1-2/26

The Infrared and Combination Spectra of Boron Oxide. III.

molecule has two fully-symmetric and totally polarized vibrations of the type  $A_1$  which are active only in the Raman spectrum; two doubly degenerate vibrations of the type  $E$  which are also active only in the Raman spectrum; two triply degenerate vibrations of the type  $F_1$  which are forbidden both in the Raman and in the infrared spectrum, and four triply degenerate vibrations of the type  $F_2$  which are active both in the Raman and the infrared spectra. Force constants are calculated for a valence model of  $B_4O_6$  on the assumption that, firstly,  $B_4O_6$  molecule belongs to the  $T_d$  point-group of symmetry and, secondly, that the three experimentally observed

Card 2/7

51-4-1-2/26

The Infrared and Combination Spectra of Boron Oxide. III.

frequencies at 1035, 808 and 470  $\text{cm}^{-1}$  belong to the  $A_1$ ,  $A_1$  and E types of symmetry respectively. The force constants were calculated to be  $f = 5.852 \times 10^5$ ,  $d = 0.644 \times 10^5$  and  $g = 0.590 \times 10^5$  dynes/cm. Details of calculations of the force constants and frequencies for boron oxide were reported in a dissertation by T. A. Sidorov. Using these force constants the frequencies of the remaining seven fundamental vibrations of the molecules were found to be: type E: 1372  $\text{cm}^{-1}$ ; type  $F_1$ : 1505, 383  $\text{cm}^{-1}$ ; type  $F_2$ : 1428, 1059, 671 and 671  $\text{cm}^{-1}$ . Comparison of the calculated and observed frequencies is given in Table 1; the second row in that table gives the observed values. One frequency, at 1260  $\text{cm}^{-1}$  differs by 16% from the calculated value of

Card 3/7

The Infrared and Combination Spectra of Boron Oxide. <sup>51-4-1-2/26</sup> III.

1059  $\text{cm}^{-1}$ , but for other frequencies the difference between the calculated and experimental values does not exceed 10%. This is considered to be satisfactory in view of the approximations made. Seven strongest Raman and three strongest infrared bands are interpreted as fundamental (Table 2). Weak bands of the infrared and Raman spectra may be represented as first harmonics, sums, and differences of the fundamental vibration. The observed departure from selection rules and the high degree of depolarization of the 808  $\text{cm}^{-1}$  band is due to considerable intramolecular forces in boron oxide. To study vibrational spectra of isotopic molecules, the infrared spectrum of boron oxide enriched with  $\text{B}^{10}$  isotope was measured. The Card 4/7 enriched oxide had 71% of  $\text{B}^{10}$  and 29% of  $\text{B}^{11}$ , compared

51-4-1-2/26

The Infrared and Combination Spectra of Boron Oxide. III.

with natural composition of 18.83% of  $B^{10}$  and 81.17% of  $B^{11}$ . On enrichment of  $B_4O_6$  with  $B^{11}$  an isotopic displacement was observed in two bands of the infrared spectrum: 21  $cm^{-1}$  at 1260  $cm^{-1}$  band and 6  $cm^{-1}$  at 718  $cm^{-1}$  band. The 1330  $cm^{-1}$  frequency falls in the wing of the 1260  $cm^{-1}$  line, and its isotopic displacement could not be observed. Both in the usual boron oxide and in the enriched oxide there are five different isotopic molecules:  $B_4^{11}O_6$ ,  $B_3^{11}B^{10}O_6$ ,  $B_2^{11}B^{10}_2O_6$ ,  $B^{11}B^{10}_3O_6$ ,  $B_4^{10}O_6$ . The percentage content of these isotopic molecules in natural and enriched oxide is given in Table 3. The calculated isotopic displacements between frequencies of molecules  $B_4^{11}O_6$  and  $B_4^{10}O_6$  are given in Table 4. The absorption bands of the oxide may be represented by means of

Card 5/7

51-4 -1-2/26

The Infrared and Combination Spectra of Boron Oxide. III.

five equidistant components with intensities proportional to the percentage content of the isotopic molecules of  $B_4O_6$  (Fig.2), where the upper part represents natural  $B_4O_6$  and the lower part enriched  $B_4O_6$ . From Fig.2 the authors calculate the displacement of the maximum of the absorption band on enrichment of  $B_4O_6$  with  $B^{11}$ . The results of such calculations for the  $F_2$ -type frequencies (Table 5, the upper row) and the experimental values (Table 5, the lower row) are in satisfactory agreement. This agreement and the infrared and Raman spectra of glassy  $B_4O_6$  can be taken to support the  $B_4O_6$  model and  $T_d$  symmetry of the boron oxide molecule. This is in agreement with Fajans and Barber (Ref.11).

Card 6/7

The Infrared and Combination Spectra of Boron Oxide. <sup>51- 4-1-2/26</sup> III.

All the strongest Raman bands of glassy  $B_4O_6$  were observed in liquid  $B_4O_6$  as well (Ref.1). The very strong infrared band at  $1260\text{ cm}^{-1}$  was found in the infrared spectrum of  $B_4O_6$  up to  $1000^\circ\text{C}$  (Ref.12). This shows that the molecular structure of boron oxide is similar in the glassy and liquid states. The authors thank F. I. Strizhevskaya for help in calculations. There are 2 figures, 5 tables and 12 references, of which 5 are Russian, 5 English and American, 1 German and 1 French.

ASSOCIATION: **Physics** Institute imeni P. N. Lebedev, Academy of Sciences of the USSR. (Fizicheskiy institut im. P. N. Lebedeva AN SSSR.)

SUBMITTED: March 4, 1957.

AVAILABLE: Library of Congress.

Card 7/7

1. Boron oxides-Molecular structure 2. Boron oxides-Vibration-Spectrum

SOV/51-4-6-17/24

AUTHOR: Sidorov, T.A.

TITLE: Infrared Spectra at Low Temperatures and Structure of Quartz and Cristobalite (InfraKrasnyye spektry pri niskikh temperaturakh i struktura kvartsa i kristobalita)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol IV, Nr 6, pp 800-801 (USSR)

ABSTRACT: X-ray crystallographic data indicate that quartz, cristobalite and tridymite have coordinational structures (Ref 1), i.e. structures in which molecules or complex ions are absent. Investigations of the infrared spectra, however, show that various crystalline forms and glasses of  $\text{SiO}_2$  have identical spectra. This fact may be explained by the presence of identical molecules or complex ions in all crystalline modifications of  $\text{SiO}_2$  and in  $\text{SiO}_2$  glass (Ref 2). Recent measurements of the infrared spectra of quartz, tridymite, cristobalite and fused quartz (Refs 3, 4) show the presence, in addition to absorption bands which are present in all these crystals and in glass, of weak absorption bands characteristic of each crystalline modification:  $694 \text{ cm}^{-1}$  for quartz,  $568 \text{ cm}^{-1}$  for tridymite and  $615 \text{ cm}^{-1}$  for cristobalite. Fused quartz does not possess a characteristic absorption band. It may be assumed that the bands present in the

Card 1/3

Infrared Spectra at Low Temperatures and Structure of Quartz and Cristobalite SOV/51-4-6-17/24

infrared spectra of all crystalline modifications and in glass are due to internal vibrations in molecules or complex ions. The bands characteristic of each crystalline modification are produced by vibrations of molecules or complex ions with respect to one another or they may be due to combinations of intermolecular with internal molecular vibrations. This assumption may be verified by investigation of the infrared spectra of  $\text{SiO}_2$  crystals at various temperatures. The absorption bands due to internal molecular vibrations are not affected much by temperature, while the bands due to intermolecular vibrations are changed considerably when temperature is changed (Ref 2). The samples used were in the form of mixtures of crystal powders (1  $\mu$  diameter and smaller particles) with paraffin oil. Only quartz and cristobalite were studied. Measurements were made using a double-beam infrared spectrometer (Ref 7) with NaCl and KBr prisms. It was found that within the limits of experimental error temperature does not affect the position width and intensity of absorption bands at 1150, 1070, 790, 520-460  $\text{cm}^{-1}$  which are common to all crystal modifications and glass. The figure on p. 800 shows absorption bands which are characteristic for quartz and cristobalite modifications respectively. Both the shape of the bands and positions of their maxima change on transition from room temperature (dashed curves) to

Card 2/3



Infrared Spectra at Low Temperatures and Structure of Quartz and Cristobalite SOV/51-4-6-17/24

liquid-nitrogen temperature (continuous curves). For quartz the maximum at room temperature was at  $694\text{ cm}^{-1}$  and at low temperatures it was at  $697\text{ cm}^{-1}$ ; for cristobalite the maximum at room temperature was at  $615\text{ cm}^{-1}$ , and at low temperature at  $617\text{ cm}^{-1}$ . The measurements carried out on the infrared spectra of quartz and cristobalite thus show that the assumptions given above on the structure of these substances and the origin of their absorption spectra are correct. The ideas put forward in this note make it possible to explain the temperature behaviour of low-frequency bands in the Raman spectrum of crystalline quartz (on increase of temperature these bands broaden and their frequency decreases). There are 1 figure and 9 references, 4 of which are Soviet, 2 American, 1 Belgian, 1 German and 1 Indian.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva, AN SSSR (Physics Institute imeni P.N. Lebedev, Academy of Sciences of the U.S.S.R.)

SUBMITTED: December 4, 1957  
Card 3/3

SUDOROV, T. A.

p 3

PHASE I BOOK EXPLOITATION

SOV/4417

Akademiya nauk SSSR. Fizicheskiy institut

Isledovaniya po optike (Optics Research) Moscow, 1960. 273 p. (Its: Trudy, tom 12)  
2 000 copies printed.

Resp. Ed.: I.V. Shchel'tsyn, Academician; Ed. of Publishing House: D.M. Alekseyev;  
Tech. Ed.: G.A. Astaf'yeva.

PURPOSE: This volume is intended for researchers in optics, physics, and chemistry.

COVERAGE: This volume contains one abridged and two complete texts of dissertations for the degree of Doctor of Physics and Mathematics which were defended by three candidates in 1957 at the Fizicheskiy institut imeni P.N. Lebedeva AN SSSR (Physics Institute imeni P.N. Lebedev, Academy of Sciences USSR). Each dissertation is followed by lists of references.

TABLE OF CONTENTS:

Galanin, M.G. Resonance Transfer of Excitation Energy in Luminescent Solutions 3  
This is an abbreviated text of the author's dissertation for the degree of Doctor of Physics and Mathematics, defended at the Physics Institute imeni P.N. Lebedev.

Optical Research

SCV/4417

P.N. Lebedev : February 27, 1964. The author compares Th. Förster's quantum mechanical theory with the classical interpretation. He examines two extreme cases (the case of "motionless molecules" and the case of "agitation") of averaging probability transfer by the concentration of molecules and how they might be explained by the Vavilov theory containing the assumption of "instantaneous quenching". He also computes the mean time of the excited state in relation to concentration. The data relate to concentration phenomena in solutions of luminescent compounds, resonance quenching, sensitized luminescence in solutions, energy transfer in anthracene crystals with naphthalene content, and sensitization of luminescence by the solvent.

Sushchinskiy M.M. Combined Scattering Spectra and Structure of Hydrocarbons 54  
This is the author's dissertation for the degree of Doctor of Physics and Mathematics, defended at the Physics Institute named P.N. Lebedev on June 24, 1960. The material deals with: experimental methods of studying combined scattering spectra; computation methods of vibration frequency of molecules; spectra of combined scattering of paraffins, naphthenes, and unsaturated hydrocarbons; and tensor of polarization derivative and parameters of combined scattering spectra.

Card 2/3

Library Research

SOV/4417

G. I. Ivanov, B.A. Infrared Spectra and Structure of Certain Glass-Forming Oxides 225  
This is the author's dissertation for the degree of Doctor of Physics and  
Mathematics, defended at the Physics Institute imeni P.N. Lebedev on  
September 16, 1957. The author describes experiments and presents experi-  
mental data on infrared spectra of glass-forming oxides. He also presents  
detailed data on the vibration spectrum and structure of phosphoric and  
boric anhydrides.

AVAILABLE: Library of Congress

Card 3/3

JA/wbc/gmp  
12-7-60

[illegible]

Vitreous State (Cont.)	80V/5035	147
Bartenev, G.M. Production of Optically Anisotropic Glasses		153
Discussion		
Optical Properties and Structure of Glasses		
Florinckoy, V.A., and R.G. Terent'ev. Study of Glass Crystallization Products of the $\text{Na}_2\text{O-SiO}_2$ System by the Infrared Spectroscopic Method		157
Florinckoy, V.A. Infrared Reflection Spectra of Soda-Silicate Glasses and Their Relation to Structure		177
Alcheyev, A.G. Study of Glass Crystallization Products of the $\text{Na}_2\text{O-SiO}_2$ System by the X-Ray Diffraction Method		184
Bobovich, Ya.S., and T.P. Tulub. Combination Scattering of Light (Raman Spectra) and Structure of Some Silica Glasses		199
Kolesova, V.A. Study of the Structure of Alkali Aluminosilicate Glasses by Their Infrared Absorption Spectra		203
Card 9/20		
Vitreous State (Cont.)	80V/5035	207
Markin, Ye.P., V.V. Gubshov-Renskov, T.A. Sidorov, R.S. Sobolev, and V.P. Chernitskiy. Vibration Spectra and Structures of Glass-Forming Chalcides in Crystalline and Vitreous States		213
Sidorov, T.A. Molecular Structure and Properties of Crystalline Quartz		219
Brekovskikh, S.M., and V.P. Chernitskiy. Study of the Structure of Lead Borate and Bismuth Borate Glasses With the Aid of Infrared Spectroscopy		222
Vlasov, A.G. Quantitative Correlation of the Ordered and Disordered Phases in Glass		226
Bagut'yants, G.O., and A.G. Alcheyev. Electron Diffraction Study of Vitreous Silica and Lead Silicate Glasses		230
Kolyalin, A.I. Anomalous Scattering of Light in Glass		
Vitreous State (Cont.)	80V/5035	
Andreyev, M.S., V.I. Avdeyenko, and N.A. Vashchillo. On the Role of Inter-molecular Interference in Diffraction Optical Phenomena in Soda Borosilicate Glasses		234
Discussion		238
Electrical Properties of Glasses		
Myller, E.I. [Factor of Chemical Nature]. Mobility of Cations and the Degree of Disorientation of Polar Groups as a Function of the Ion-Atom Composition of Glass		245
Preshov, V.A., V.I. Gubanov, and L.M. Kravtchenko. Electrical Conductivity of Glasses in High Strength Electric Fields and Problems of Glass Structure		251
Belyavskaya, I.M. Study of Electrical Conductivity of Glasses by the Method of Nonuniform Electric Field		254
Card 11/20		

15.2110

29031  
S/081/61/000/018/001/027  
B104/3101

AUTHOR: Sidorov, T. A.

TITLE: Molecular structure and properties of crystalline quartz

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 18, 1961, 14-15, abstract  
18B89 (Sb. "Stekloobrazn. sostoyaniye". M.-L., AN SSSR,  
1960, 213-218. Diskuss. 238-242)

TEXT: On the basis of the similarities of the infrared absorption spectra of quartz, tridymite, cristobalite, and fused quartz glass and of the Raman spectra of quartz and fused quartz glass it is assumed that all these  $\text{SiO}_2$  modifications consist of molecules. It was found that by means of the  $\text{Si}_3\text{O}_6$  molecules with  $D_{3h}$  symmetry, which have the structural formula (I), X-ray diffraction data on the spatial location of the silicon atoms may be explained. The structures of  $\alpha$ - and  $\beta$ -quartz, the cause of the high rate of  $\alpha$ - $\beta$ -transitions and the origin of Dauphinée twins are explained by representation of the electrostatic molecular interaction. Quartz molecules form right and left spirals by which the effects of

Card 1/3

29031

S/081/61/000/018/001/007  
B104/B101

Molecular structure and...

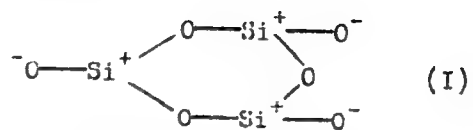
optical activity are explained. The splitting of the five fundamental oscillation frequencies into three Davydov components results from the dipole-dipole resonance interaction of quartz molecules. In the Raman spectrum and in the infrared spectrum of quartz there are four groups out of the three closely situated components which harmonize with theory as to their activity in the infrared Raman spectra and as to the character of polarization. In consequence of the electrostatic forces acting from the side of the charged ends of neighboring molecules in a given molecule, an electric dipole moment is induced. The value of this dipole moment changes with a change of the distance between these molecules, that is with deformation. Taking into account the symmetry of the unit cell it is possible to say which of the piezoelectric constants of  $\alpha$ - and  $\beta$ -quartz differs from zero. The strong polar bond  $\text{Si}^+-\text{O}^-$  in quartz is substituted by the weak polar bond  $\text{Si}-\text{O}^-$  during a transition from quartz to alkali-silicate glass. This explains the decay of the infrared spectrum intensity and the rise of the Raman spectrum intensity in alkali glasses with increasing alkali content.

Card 1/1



Molecular structure and...

29031  
S/081/61/000/018/001/027  
B104/B101



[Abstractor's note: Complete translation.]

Card 1/1

S/072/60/000/011/005/005  
B021/B058

AUTHOR: Sidorov, T. A., Candidate of Physical and Mathematical  
Sciences

TITLE: Correlation Between the Structure of Oxides and Their  
Vitrification Tendency

PERIODICAL: Steklo i keramika, 1960, No. 11, pp. 43 - 46

TEXT: In the present paper, the author answers a number of readers' questions dealing with the vitrification tendency of substances. The investigation of the vitrification tendency of oxides should be started by examining the character of the chemical binding in the oxides and its influence on their inner structure. Limit cases of the pure ionic and homopolar bond are dealt with next. An ionic structural type of the crystal is called coordination compound, and is distinguished by a high melting temperature. All crystals of alkali haloids (such as NaF) with a pure ion bond are called coordination crystals. Substances with homopolar bond are normally gases, liquids, or molecular crystals with low melting temperatures. Hydrocarbons and some inorganic compounds, such as F<sub>2</sub> belong

Card 1/3

Correlation Between the Structure of Oxides and Their Vitrification Tendency

S/072/60/000/011/005/005  
B021/B058

to them. The problem of the influence of the character of the chemical binding on the structure of the oxides in the crystalline state is dealt with next. Modifications in the character of the chemical binding and the structure of the oxides are traced, dependent on the position of the element in the periodic system. In conclusion, the author states that all oxides of elements can be divided into three groups according to the character of chemical binding. Metal oxides, the bonds of which are mainly given by ionic bonds, belong to the first group. Oxides of metalloids with mainly covalent bonds belong to the second group. Oxides of elements which take up an intermediate position between metals and metalloids and which possess intermediate bonds, belong to the third group. The oxides of the elements of the first group possess a coordination structure, and those of the second group, a molecular structure. A molecular structure which forms at the expense of the homopolar intermediate bond, is characteristic of the third group oxides as well as a strong intermolecular interaction of the electrostatic type, which is accomplished at the expense of the ion part of the intermediate bond. The strong intermolecular interaction in oxides of the third group warrants a moderate mobility of their oxides in liquids, which explains the vitrification tendency of these oxides. The

Card 2/3

SIDOROV, T.A.

Infrared spectra and structure of some glass-forming oxides. Truly  
Fiz.inst. 12:225-273 '60. (MIRA 13:8)  
(Oxides--Spectra)

5.2400(B)

81173

81973

S/076/60/034/07/09/009  
B015/B070

AUTHORS: Obukhov-Denisov, V. V., Sidorov, T. A., Fayzulloev, F. S.,  
Cheremisinov, V. P.

TITLE: The Vibration Spectrum of Vitreous Beryllium Fluoride

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7,  
pp. 1622-1624

TEXT: The vibration spectrum of vitreous beryllium fluoride is investigated and the results are discussed. All investigations of Raman spectra were made on a three prism spectrograph МСН (ISP)-51 and the spectra were photographed. No Raman spectrum, however, of vitreous beryllium fluoride was observed. Infrared absorption spectrum was investigated on a double radiation spectrophotometer (Ref. 2) and an intensive absorption band with a maximum at  $750\text{ cm}^{-1}$  was established. It is assumed that the structure of  $\text{BeF}_2$  is neither typically ionic nor molecular. The high degree of homopolarity of the Be - F bond shows that the valence electrons are for most of the time between Be and F atoms and guarantee the formation of

Card 1/2

UH

The Vibration Spectrum of Vitreous Beryllium  
Fluoride

S/076/60/034/07/09/009  
B015/B070  
81973

molecules or complicated ions. The ionic character of the bond on the other hand shows that in  $\text{BeF}_2$  molecule the atoms of Be and F possess charges and a strong interatomic interaction is present. The authors thank L. R. Batsanova and A. V. Novoselova for the  $\text{BeF}_2$  sample and N. N. Sobolev for advice. There are 1 figure and 8 references: 6 Soviet, 1 German, and 1 American.

ASSOCIATION: Akademiya nauk SSSR Fizicheskii institut im. P. N. Lebedeva  
(Academy of Sciences of the USSR, Physics Institute imeni  
P. N. Lebedev)

SUBMITTED: October 31, 1958

Card 2/2

UH

BREKHOVSKIKH, S. M., SIDOROV, T. A. and CHUBKINA, N.I.

"Structure and Properties of Germanium Glasses"

report presented at the Sixth International Congress on Glass, 8-14 Jul 62,  
Wash., D.C.

Research Institute of Glass, Moscow

KORSHAK, V.V.; KOMAROVA, L.I.; SIDOROV, T.A.

Infrared spectra of organic complexes of beryllium. Izv. AN SSSR.  
Utd.khim.nauk no.5:813-815 My '62. (MIRA 15:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.  
(Beryllium organic compounds—Spectra)



S/062/62/000/008/009/016  
B101/B180

AUTHORS:

Korshak, V. V., Vinogradova, S. V., Salazkin, S. N., and  
Sidorov, T. A.

TITLE:

Production of polyaryls based on phenol phthalein by inter-  
phase polycondensation

PERIODICAL:

Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh  
nauk, no. 8, 1962, 1416-1423

TEXT: This is the 47th report on heterochain polyesters. Interphase poly-  
condensation of phenol phthalein (P) with chlorides of dicarboxylic acids  
yielded polymers of low intrinsic viscosity,  $[\eta]$ . Reacting P with  
isophthalic acid in this way in p-xylol solution, at initial reactant  
concentrations of 0.1 mole/l, with 2M NaOH per M phenol phthalein,  
resulted in  $[\eta] \leq 0.23$  (in tricresol) and yields of up to 80%. Higher  
alkaline concentrations reduced both  $[\eta]$  and yield. Nor did an emulsifier  
(Nekal) or catalyst (triethylbenzyl ammoniumchloride) cause an  
appreciable increase in  $[\eta]$ . Polycondensates from P and terephthallic  
acid (T), and mixed polycondensates from P, 4.4'-dihydroxydiphenylpropane

Card 1/3

S/062/62/000/008/009/016  
B101/B180

Production of polyaryls based ...

(Dian) and I or T all had a low  $[\eta]$  (0.26-0.32).  $[\eta]$  was lower still (0.12-0.16) when the dichlorides of I and T were totally or partially replaced by fumaryl dichloride, due to the slight hydrolysis caused by the latter. These results are attributed to the slow rate of the tautomeric transformation of P. In alkaline solution it is assumed that there is equilibrium between the quinoid and the lactone forms. The chloride of the dicarboxylic acid only reacts with the lactone. Since transition from quinoid to lactone occurs slowly, hydrolysis of the acid chloride sets in, and the molecular weight remains low. This is supported by the absence of a band characterizing the quinoid structure at  $1680\text{ cm}^{-1}$  in the IR spectra of the polycondensates. The  $1300\text{ cm}^{-1}$  band, attributed by S. Lo Elisabeth to the quinoid form (Industr. and Engng. Chem., 52, 319 (1960)), was ascribed to the residue of I, since it was also observed in the polycondensate of Dian and I. The doublet  $1710\text{-}1760\text{ cm}^{-1}$  is attributed to the different bonds of the carbonyl groups (ester and lactone bonds). There are 2 figures and 4 tables.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

Card 2/3

KORSHAK, V.V.; ROGOZHIN, S.V.; SIDOROV, T.A.; CHZHOU ZHUN'-PEY; KOMAROVA, L.I.

Synthesis and structure of polymeric compounds from saturated  
alkyl aromatic compounds. Izv.AN SSSR Otd.khim.nauk no.5:  
912-921 My '63. (MIRA 16:8)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Polymers) (Aromatic compounds)

L 24839-65 ENT(m)/EPF(c)/EPR/ENP(j)/T Po-4/Pr-4/Ps-4 ASD(m)-3/AFETR/RPL  
RM/WW

ACCESSION NR: AP4047401

S/0062/64/000/010/1881/1832

33  
32  
B

AUTHOR: Zamyatina, V. A.; Oganesyan, R. M.; Sevost'yanova, V. V.;  
Sidorov, T. A.

TITLE: The reaction of nitroallyl with N-trimethylborazole

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 10, 1964, 1881-1882

TOPIC TAGS: nitroallyl, trimethylborazole, nitroallyl trimethylborazole reaction product, synthesis, polymerization

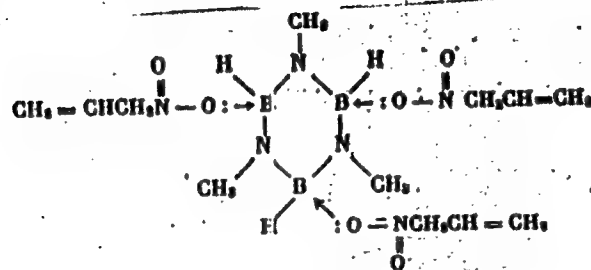
ABSTRACT: The reaction of 3-nitropropen-1 with N-trimethylborazole in ether solution at reduced temperature gave a white crystalline product corresponding to the formula  $(\text{NO}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{BNCH}_3)_3$ . The material did not melt, but gradually decomposed on heating from 180-300C. It exploded in a sealed capillary at 130-140C and was not reduced to the amine with Raney nickel. The material did not form a complex with methanol at room temperature, but dissolved in boiling benzene and on cooling separated as a powder insoluble in benzene or dimethylformamide, probably due to polymerization. IR data and physical properties in-

Card 1/2

L 24839-65

ACCESSION NR: AP4047401

dicat formation of the complex:



Orig. art. has: 1 formula and 1 equation

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 17Feb64

ENCL: 00

SUB CODE: GC, OC

NO REF SOV: 004

OTHER: 002

Card 2/2

L 40972-65 EWT(m)/EPF(c)/EWP(j) PC-4/Pr-4 JAJ/RM  
 S/0062/65/000/001/0146/0154  
 ACCESSION NR: AP5006416

AUTHOR: Korshak, V. V.; Rogozhin, S. V.; Sidorov, T. A.; Chou Jun-p'ei;  
 Komarova, L. I.

TITLE: Preparation of polymer products from p-xylene, pseudocumene, and ditolyl-  
ethane

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 1, 1965, 146-154

TOPIC TAGS: polymer, xylene, pyrolysis, pyrolysis polymerization

ABSTRACT: Polymer compounds were produced by thermal polydehydrocondensation of p-xylene, pseudocumene, and ditolyethane. These hydrocarbons were pyrolyzed on an incandescent metal wire located in a liquid monomer. The effect of temperature and time on the yield of polymers was investigated and it was found that the yield increased with both temperature and time. The structure of the polymers was investigated through analysis of their infrared spectra. The probable mechanism of the formation of polymer products was discussed. It was assumed that the soluble polymer of p-xylene is formed chiefly by branching of linear molecules, as a result of interaction with active radicals and the recombination of macroradicals with each other or with radicals forming from monomers, dimers, etc. Orig. art. has:

Card 1/2

L 40972-65

ACCESSION NR: AP5006416

9 figures, 5 tables, 2 equations.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Elementoorganic Compounds, Academy of Sciences SSSR)

SUBMITTED: 19Feb63

ENCL: 00

SUB CODE: CC, OC

NO REF SOV: 001

CTHER: 002

*llc*  
Card 2/2

KORCHAL, V.V.; SIDOROV, T.A.; VINOGRADOVA, S.V.; KOMAROVA, I.I.; VALETSKIY,  
P.M.; LEBEDEV, A.S.

Heterochain complex polyesters. Report No.52: Determination of  
double bonds in unsaturated polyarylates by infrared spectro-  
scopy. Izv. AN SSSR Ser. khim. no.2:261-268 '65. (MIRA 18:2)

1. Institut elementoorganicheskikh soedineniy AN SSSR.



SIDOROV, T.A.

Comparatively study of the nuclear magnetic resonance and  
infrared spectra of sodium borate glasses. Opt. i spektr.  
18 no.3:384-387 Mr '65. (MIRA 18:5)

SEARCH CODE: 01/0306/06/005/002/0111/0117

Author: Shklovskiy, P. A.

Card: none

TITLE: Investigation of infrared reflection spectra of lithium-alumosilicate glasses and pyrocerams

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 1, 1966, 111-117

TOPIC TAGS: glass property, light reflection, ir spectrum, silicate glass, lithium glass, borate glass, energy band structure

ABSTRACT: The authors report investigations of the infrared spectra of lithium aluminum silicate glasses, the same glasses with small amounts of titanium dioxide added, and glasses with small amounts of titanium dioxide added, and glasses crystallized at different temperature (pyrocerams). The investigations were carried out over a wider range of compositions than in earlier investigations by others. The compositions, method of preparation, and method of heat treatment of the various samples are described. The infrared spectra were obtained with a double-beam instrument (IKS-14), one of the mirrors of which was replaced by the sample. The observed infrared bands are correlated with vibrations of different bonds and with definite crystalline compounds in the pyrocerams. The region of existence of Si--O<sup>-</sup> bonds in lithium

Card 1/2

UDC: 535.33:539.213

1. 100-37

ACC NO: AP0007902

aluminosilicate glasses was established and found to be present only in glasses where  $SiO_2/Al_2O_3 > 1$ . The 1170 and 1030  $cm^{-1}$  bands observed in the infrared spectra of pyrocerams are attributed to  $\beta$ -spodumene crystals, while the narrow band at 1020  $cm^{-1}$  is attributed to  $\beta$ -cristobalite crystals, in agreement with results obtained by others. The 1000  $cm^{-1}$  band observed in pyrocerams of composition close to spodumene and in pyrocerams with larger silica contents is attributed to the vitreous phase. This vitreous phase is shown to have a composition close to that of quartz glass. A phase analysis of the pyrocerams based on the infrared spectra yielded results coinciding with the phase analysis obtained by x ray diffraction. It is concluded that an advantage of infrared spectroscopy over x ray diffraction is the possibility of determining in some cases the vitreous phase of the pyroceram and its approximate composition. Orig. art. has: 4 figures and 1 table

SUB CODE: A, 20/ SUBM DATE: 02Apr65/ ORIG REF: 005/ OTH REF: 002

ACC NR: AP6036793

(A)

SOURCE CODE: UR/0363/66/002/011/2039/2044

AUTHOR: Sidorov, T. A.; Tyul'kin, V. A.

ORG: none

TITLE: Investigation of glass ceramics in the  $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2$  system by the method of electron paramagnetic resonance

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 11, 1966, 2039-2044

TOPIC TAGS: metal ceramic material, lithium oxide, aluminum oxide, silicon dioxide, electron paramagnetic resonance

ABSTRACT: The glass ceramics were investigated in a standard FE-1301 unit with a double modulated magnetic field. The composition of the glasses on the basis of which the glass ceramics were obtained, is shown in Figure 1.  $\text{TiO}_2$  was used as a catalyst in the crystallization. Based on the experimental results, an extensive table gives the g factors of the electron paramagnetic resonance lines. It was established that in the crystallization of the glass, the neighborhood of the centers determined by the electron magnetic resonance line with  $g = 2.010$  is ordered. This means that the end oxygen atoms enter into the crystal lattice. This result agrees with data obtained with an infrared spectroscope. The changes in the structure of the lines (during

Card 1/2

UDC: 666.1:542.65:538.113

ACC NR: AP6036793

crystallization), due to the electronic center in the titanium, indicates that in the formation of glass ceramics, the titanium atom also enters the crystalline part of the glass ceramic. The series of electron magnetic resonance lines, which have a g factor between 2.01 and 1.94, is related to centers in the crystalline lithium silicates. Orig. art. has: 2 figures and 1 table.

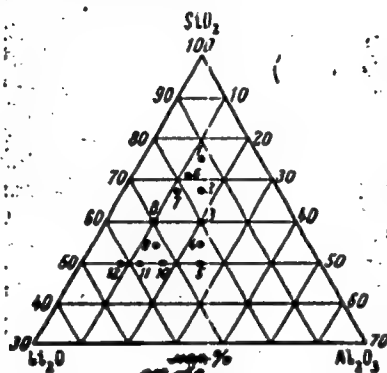


Figure 1.

SUB CODE: 11/ SUBM DATE: 12Feb66/ ORIG REF: 008/ OTH REF: 003

Card 2/2

Sidorov T.I.

KOVLINA, V.A., kand. vet.nauk; SIDOROV, T.I., vetvrach; YERGAYEV, K.P.,  
vetvrach.

Compound treatment of paratyphoid fever in calves. Veterinariia 35  
no.1:64-65 Ja '58. (MIRA 11:2)

1. Nauchno-proizvodstvennaya laboratoriya po bor'be s boleznyami  
molodnyaka (for Kovylin). 2. Kuybyshevskaya mezhsovkhoznyaya vet-  
baklaboratoriya (for Sidorov, Yergayev).  
(Paratyphoid fever) (Calves--Diseases and pests)

SIDOROV, V.

"Mobile 560-kva, 6-10/0, 4-kv. Transformer Station." Tr. from the Russian. p. 131, Praha, Vol. 4, no. 3, Mar. 1954.

SO: East European Accessions List, Vol. 3, No. 9, September 1954, Lib. of Congress

SOV/107-59-2-11/55

6(6)

AUTHOR: Sidorov, V., Deputy

TITLE: Our Complaints (Nashi pretenzii)

PERIODICAL: Radio, 1959, Nr 2, p 14 (USSR)

ABSTRACT: The author blames the bad service of television repair shops. It is impossible for a television set owner to obtain antennas, cable, voltmeters or auto-transformers, it is even practically impossible to purchase an ordinary safety fuse.

ASSOCIATION: Kirovskiy raysovet, g. Kopeysk (the Kirov Raysovet at Kopeysk)

Card 1/1



SOV/25-52-4-29/44

8(3)

AUTHORS: Azarkh, M., Sidorov, V., Engineers

TITLE: "Elektronit" (Elektronit)

PERIODICAL: Nauka i zhizn', 1959, Nr 4, p 67 (USSR)

ABSTRACT: Recently a new material "elektronit" for electric insulation was developed by Engineer F. Gorshkov of the "Dinamo" Plant in cooperation with N. Dodonov, Engineer of the Tsentral'-naya nauchno-issledovatel'skaya laboratoriya asbesta (Central Scientific Research Laboratory of Asbestos). The basic materials used for elektronit are asbestos fibres and synthetic rubber. In comparison with the generally applied micaceous material, elektronit possesses many advantages. It has a very high electric strength and can be used in devices operating under 600 volt and, as has been recently proved in tests, even up to 3,000 volt. There are 3 photos.

Card 1/1

SCV/25-59-7-27/53

15(8)

AUTHORS: Azarkh, M., and Sidorov, V., Engineers

TITLE: Asbodin

PERIODICAL: Nauka i zhizn', 1959, Nr 7, pp 66-67 (USSR)

ABSTRACT: The article describes a new insulation plastic - asbodin (compound word derived from "Asbest" and "Dinamo") - developed by the Gorshkov brothers, Fedor Nikolayevich and Dmitriy, of the Moscow "Dinamo" Plant Imeni S.M. Kirov, and Engineer N.Dodonov of the Vsesoyuznyy nauchno-issledovatel'skiy institut asbestovykh tekhnicheskikh izdeliy (All-Union Research Institute of Asbestos Goods for Technical Purposes). Asbodin can be used in the electrotechnical industry (Figures 1 and 2), in building construction, and in the household. It is made of asbestos fiber, synthetic rubber, iron minium, and other materials. Put first into press molds, asbodin is then pressed to shape at a rather moderate temperature, with

Card 1/2

SOV/25-59-7-27/53

Asbodin

consecutive calcining in an electric kiln. The new plastic is economical insofar as it can replace such expensive materials as glass textolite, various fibers, and silicon-organic plastics. In 1958 alone, the new plastic brought about a saving of as much as 500,000 rubles at the above plant. There are 2 photographs.

ASSOCIATION: Moskovskiy zavod "Dinamo" imeni S.M. Kirova (Moscow  
"Dinamo" Plant Ineni S.M.Kirov)

Card 2/2

AZARKH, M., inzh.; SIDOROV, V., inzh.

Safety control panel. Nauka i zhizn' 27 no.7:67 J1 '60.  
(MYRA 13:7)

1. Moskovskiy zavod 'Dinamo.'  
(Cranes, derricks, etc.) (Automatic control)

SIDOROV, V.; ZVEREV, N.

For the best production in the world. Vnesh. torg. 41 no.8:34  
'61. (MIRA 14:8)

(Moscow—Electric industries)  
(Russia—Commerce)

MUKHAMEDZHANOV, M., student; TURULINA, T., studentka; PAVLOVA, H.,  
studentka; PARSHAKOVA, V., studentka; SUTBAYEV, S., student;  
SIDOROV, V., student; ANDRUSEVICH, V., student; BAYMENOV, A.,  
student; ABRAMOVICH, B., student; MALIOVSKAYA, Ye., studentka;  
GUDCHIKINA, L.M., assistant

Mineralogical characteristics of loess of Alma-Ata Province. Sbor.  
nauch. trud. Kaz GMI no.19:159-163 '60. (MIRA 15:3)  
(Alma-Ata Province--Loess)

SIDOROV, V.

Uniform methods. Mast. ugl. 9 no.12:4-5 D '60.

(MIRA 13:12)

1. Sekretar' Artemovskogo gorkoma Kommunisticheskoy partii  
Sovetskogo Soyusa.  
(Coal mines and mining) (Mine management)

SHONOROV, G., inzh.; SIDOROV, V., inzh.

Foamed polyurethan sheets. Na stroi.Ros. no.4:31 Ap '61.  
(MIRA 14:6)

(Urethanes) (Building materials)



SIDOROV, V.

For great cooperation. Grazhd. av. 19 no.5:8 My '62. (MIRA 18:6)

1. Chlen Primorskogo krayevogo komiteta Kommunisticheskoy  
partii Sovetskogo Soyuza.

SIDOROV, V. inzh.

Create exemplary sanitary conditions in the city of Sverdlovsk.  
Zhil.-kom.khoz: 9 no.7:28-29 - '59. (MIRA 12:11)

1. Upravlyayushchiy trestom ochistki g.Sverdlovsk.  
(Sverdlovsk--Street cleaning)

SIDOROV, V. (Stavropol')

Combined objective with a bamboo tube. Sov. foto 19 no.5:60-61  
My '59. (MIRA 12:9)

(Telephotography)

SIDOROV, V. (Stavropol')

Inexpensive long-focus lenses. Sov.foto 21 no.3:31-32 Mr '61.  
(MIRA 14:4)

(Lenses, Photographic)

5(3)

SOV/62-59-1-9/38

AUTHORS:

Sterlin, R. N., Sidorov, V. A., Knunyants, I. L.

TITLE:

Reactions of Fluoro Olefins (Reaktsii ftorolefinov)  
Communication IX. Action of Anhydrous Aluminum Trichloride  
on Fluoro Olefins (Soobshcheniye 9. Deystviye bezvodnogo  
trekhkhlorigistogo alyuminiya na ftorolefiny)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1959, Nr 1, pp 62 - 64 (USSR)

ABSTRACT:

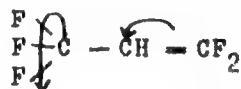
In the present paper the authors investigated the effect  
exercised by anhydrous  $AlCl_3$  on fluorinated olefins and  
especially on perfluoro propylene and 2-hydroperfluoro  
propylene. As a result of the interaction of  $CF_3-CH=CF_2$   
with  $AlCl_3$  pentachloro propene  $CCl_3-CH=CCl_2$  is synthe-  
sized as the only reaction product in a  $CH_3COCl$  solution  
under pressure (yield 65.5%). Similar results were obtained  
in the cold, at atmospheric pressure and in the substitution  
of chloroform for chloro acetyl. The complete exchange of  
fluorine atoms for chlorine in fluorinated olefins takes

Card 1/3

Reactions of Fluoro Olefins. Communication IX. Action  
of Anhydrous Aluminum Trichloride on Fluoro Olefins

SOV/62-59-1-9/38

place under extremely soft conditions. This exchange  
apparently is a result of the  $\sigma, \pi$  conjugation in the  
2-hydroperfluoro propylene molecule



which determines the mobility of fluorine atoms of the  $\text{CF}_3$   
group and the levity of the allyl regrouping. In the reaction  
of  $\text{AlCl}_3$  with perfluoro propylene, which was carried out  
under equal conditions as in the case of 2-hydroperfluoro pro-  
pylene, the only reaction product obtained was a compound  
with a  $\text{C}_3\text{FCl}_5$  composition. Its structure may be expressed by  
one of the following formulae:  $\text{CFCl}_2 - \text{CCl} = \text{CCl}_2$ ,  
 $\text{CCl}_3 - \text{CF} = \text{CCl}_2$  (Ref 3). The compounds obtained were  
oxidized in order to determine their structure. Trichloro-  
acetic acid was synthesized as a result of the oxidation.

Card 2/3

Reactions of Fluoro Olefins. Communication IX. Action  
of Anhydrous Aluminum Trichloride on Fluoro Olefins

SOV/62-59-1-9/38

This may be taken as a proof that 1,1,1,3,3-pentachloro-  
2-fluoropropylene-3 was obtained as a result of the exchange.  
There are 3 references, 1 of which is Soviet.

SUBMITTED: April 17, 1957

Card 3/3

S/020/60/132/04/21/064  
B014/B007

AUTHORS: Donabedov, A. T., Sidorov, V. A. Timarev, K. V.,  
Torkhovskaya, L. N.

TITLE: The Relations Between the Velocities of Simultaneous  
Vertical Motions of the Earth's Crust, the Gravitational ✓  
Fields, and the Elements of the Earth's Structure

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 4, pp. 810-813

TEXT: In the introduction, the direct and indirect correlation between the time-dependent changes of the gravitational field and the vertical motion of the Earth's crust are discussed, and two symbolic relations for this purpose are given. In the geophysical laboratory of the Kompleksnaya yuzhnaya geologicheskaya ekspeditsiya Akademii nauk SSSR (Geological Expedition to the South for Comprehensive Studies of the Academy of Sciences, USSR), which was under the supervision of A. T. Donabedov, systematic investigations were carried out in 1957 of the indirect relations between the gravitational fields and the vertical motions of the Earth's crust. At the same time, the characteristic ✓B

Card 1/2



The Relations Between the Velocities of Simultaneous Vertical Motions of the Earth's Crust, the Gravitational Fields, and the Elements of the Earth's Structure

S/020/60/132/04/21/064

B014/B007

features of the structural elements of the Earth's crust were investigated. From data, which were determined in the territory of the Caspian Sea, relations between the gravitational anomalies and the vertical motions were found to exist. Three main types of relations, viz. a so-called direct, an inverse, and an indefinite relation, were discussed. From the diagrams of these measurements (Figs. 2-3) for the profiles Rostov - Sal'sk (Fig. 2) and Stalingrad - Krasnodar (Fig. 3) carried out in consideration of other profiles, several conclusions are drawn and discussed in detail. There are 3 figures and 1 Soviet reference. ✓B

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Geology and for the Exploitation of Combustible Minerals of the Academy of Sciences, USSR)

PRESENTED: October 28, 1959, by I. P. Gerasimov, Academician

SUBMITTED: October 27, 1959

Card 2/2

S/064/61/000/011/005/007  
B110/B101

AUTHORS: Telegin, V. G., Sidorov, V. A.

TITLE:

Alkylation of toluene by propylene on solid catalysts

PERIODICAL:

Khimicheskaya promyshlennost', no. 11, 1961, 65 - 67

TEXT: The authors produced cymenes from toluene and propylene in a vertical steel vessel, 930 mm high (inner diameter = 35 mm) with an immobile catalyst layer. The reaction zone (total height = 273 mm) was bounded by steel inserts and filled with the following layers: (1) Raschig glass rings, (2) 100 ml of catalyst "phosphoric acid on kieselguhr" (97 mm layer thickness), (3) Raschig glass rings. The Ufa industrial catalyst of 1960 consisted of:  $H_2O$  = 5.4%,  $P_2O_5$  free = 18.0%,  $P_2O_5$  total = 60.3%, activity = 98.7%, mechanical strength = 26.1 kg/tablet. The apparatus used for the alkylation of aromatics with olefins on immobile catalysts consists of 10 main units which may be combined according to the gaseous raw material and its purity. When using a propane - propylene fraction containing ~30% propylene, the calculated toluene was pumped in (Fig.) while the fraction was added dropwise from a burette under a

Card 1/6

...ect to the  
...ined at 250 - 275°C. a  
...ate yield to 70 - 80%. Gradual temper-  
...used higher yields of o- (59 1%) and p-

SIDCROV, V.A.; SHABUROV, M.A.; SOFRONENKO, Ye.D.

Analysis of a mixture of 2-methyl-2-butanol and  
2-methyl-2-butene based on infrared spectra.

Zav.lab. 27 no. 7:826 '61.

(MIRA 14:7)

1. Novo-Kuybyshevskiy filial Nauchno-issledovatel'skogo instituta  
sinteticheskikh spirtov i organicheskikh produktov.  
(Butanol--Spectra) (Butene--Spectra)

OSADCHENKO, I.R., red.; MASLYANSKIY, G.N., red.; BURSIAN, N.R.,  
red.; POMORSKIY, V.N., red.; KLIMENKO, V.L., red.;  
MOLDAVSKIY, B.L., red.; SIDOROV, V.A., red.; PORUNKOVA,  
G.G., red.; TOMARCHENKO, S.L., red.; FOMKINA, T.A., tekhn.  
red.

[Production of benzene]Proizvodstvo benzola; po materialam  
Vsesoiuznogo nauchno-tekhnicheskogo soveshchaniia 1960 g.  
Leningrad, Goskhimizdat, 1962. 275 p. (MIRA 16:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhi-  
micheskikh protsessov. 2. Vsesoyuznyy nauchno-issledovatel'-  
skiy institut neftekhimicheskikh protsessov (for Maslyanskiy,  
Klimenko). (Benzene)

S/064/62/000/007/001/003  
B117/B101

AUTHOR: Sidorov, V. A.

TITLE: Oxidation mechanism of paraffins in liquid phase

PERIODICAL: Khimicheskaya promyshlennost', no. 7, 1962, 24 - 29

TEXT: This is a survey of non-Soviet and Soviet papers on the oxidation mechanism of paraffins in liquid phase. Problems discussed: location of oxygen attack in the hydrocarbon chain; decomposition of peroxide compounds; conversions of peroxide decomposition products. The study of the kinetics of the formation of pure oxidation products is recommended, particularly in the initial stage of oxidation. There are 85 references.

Card 1/1

SIDOROV, V.A.

Mechanism of the oxidation of paraffinic hydrocarbons in the  
liquid phase. Khim.prom. no.7:490-495 J1 '62. (MIRA 15:9)  
(Paraffins) (Oxidation)

15.8200  
15.8530

40906  
S/191/62/000/010/001/010  
B101/B186

AUTHORS:

Heyman, M. B., Kovarskaya, B. M., Levantovskaya, I. I., Dral-  
yuk, G. V., Kazvikova, E. P., Sidorov, V. A., Kochetkov, V. M.  
Trossman, G. M., Tatevos'yan, G. O., Kuznetsova, I. B.

TITLE:

Stabilization of polyamide films for agriculture

PERIODICAL:

Plasticheskiye massy, no. 10, 1962, 6 - 8

TEXT: Protection of polyamide films, type 54, as used in hothouses and  
nylon, from effects of photo- and thermooxidation was tested by trying  
various additives under various test conditions. The following were added  
as ultraviolet light absorbers: 2-hydroxy-4-methoxy-benzophenone OMCP  
(OMBF) (I), 2-hydroxy-4-alkoxy-benzophenone (a mixture of benzophenones  
with various alkoxy groups of the type  $OC_7H_{15}$ ,  $OC_8H_{17}$ , or  $OC_9H_{19}$ ) (II), and  
2-hydroxy-5'-methyl-benzotriazole (Tinuvin) (III). As antioxidants, KI  
and copper naphthenate and organic stabilizers of the following type were  
used: 1) derivatives of aromatic amines; 2) phenol derivatives; 3) aromatic  
oxamines; 4) 2,6-ditert-butyl-4-methyl-phenyl-pyrocatechin phosphite (Ionol).

Card 1/2

5

S/191/62/000/010/001/010  
B101/B186

stabilization of ...

Polyamide film blanks produced by condensation, namely hexamethylene adipate and  $\epsilon$ -caprolactam at 260°C in an N-atmosphere, were subjected to thermo- and photooxidative action. Light sources were carbon-arc and mercury-quartz lamps, type ПРК-2 (PRA-2). Temperature in the test chamber was 70 ± 2°C. Thermooxidation measured by the drop in oxygen pressure was eliminated most efficiently by the pyrocatechin esters and phenyl- $\beta$ -naphthyl-mine. It was found that stabilizers of the OMBF and Tuvin types act as antioxidants. Photooxidation experiments showed the following results: in most cases the elongation at rupture dropped even on initial exposure. After 200 hrs of exposure time, breaking tenacity of both stabilized and nonstabilized films fell by approximately 20 - 25%. Ageing time until embrittlement was determined. Without an inhibitor it began after 190 hrs of exposure to the light of an arc lamp. Optimum results were obtained with pyrocatechin esters (250 hrs), KI + copper naphthenate (260 hrs) and (Santovar)  $\odot$  ((2,6-di-tert-butyl-hydroquinone)) (240 hrs). Different action of the light from the arc lamps and the mercury lamps was explained by spectrum differences. Further field tests are recommended. There are 3 figures and 1 table.

Card 2/2



BORISOV, Ye.F., dots.; EREGEL', E.Ya., prof.; BUKH, Ye.M., dots.;  
VASHENTSEVA, V.M., dots.; GOLEVA, Yu.P., kand. ekon. nauk;  
GOLEVA, A.P., kand. ekon. nauk; DEMOCHKIN, G.V., dots.;  
DONABEDOV, G.T., kand. ekon. nauk; YERMOLOVICH, I.I., dots.;  
KALYUZHNIYY, V.M., dots.; KORNEYEVA, K.G., dots.; KUZNETSOVA,  
A.S., prof.; MIROSHNICHENKO, V.S., dots.; MYASNIKOV, I.Ya.,  
kand. ekon. nauk; PIKIN, A.S., dots.; SIDOROV, V.A.; SMIRNOV,  
A.D., dots.; SOLOV'YEVA, K.F., dots.; SOROKINA, I.F., dots.;  
TARUNIN, A.F., kand. ekon. nauk; KHARAKHASH'YAN, G.M., prof.;  
MENDEL'SON, A.S., red.; SHVEYTSEY, Ye.K., red.; ROTOVA, R.S.,  
red.; GARINA, T.D., tekhn. red.

[Economics of socialism] Politicheskaya ekonomiya sotsializ-  
ma. Moskva, Gos.izd-vo "Vysshaya shkola," 1963. 476 p.  
(MIRA 17:2)

SIDOROV, V. A.

Thermodynamics of the process of cymene production. Khim. prom.  
no.3:201-205 Mr '63. (MIRA 16:4)

(Cymene)

SIDOROV, V. A.  
AID Nr 974-11 22 May

**SELF-EXTINGUISHING ELASTIC FOAMED POLYURETHANE (USSR)**

Sidorov, V. A., I. M. Zverev, V. P. Aref'yev, and V. D. Samsonov.  
Plasticheskiye massy, no. 4, 1963, 69-70. S/191/63/000/004/014/015

Self-extinguishing elastic foamed polyurethane ППУ has been prepared by adding up to 25 parts of tricresyl or trichloroethyl phosphate to 118 parts of the polyurethane starting material. The new material can be produced with existing equipment. The physical and mechanical properties of experimental self-extinguishing ППУ were shown to meet the TV 35 XII-395-62 r. specifications, but addition of phosphates considerably lowers the heat resistance of ППУ. The self-extinguishing ППУ is easier to make with tricresyl than with trichloroethyl phosphate, and the product has better physical and mechanical properties. [BAO]

Card 1/1

*BR*

ACCESSION NR: AR4036156

S/0282/64/000/003/0069/0069

SOURCE: Ref. Zh. Khimich. i kholod. mashinostr. Otd. vyp., Abs. 3.47.545

AUTHOR: Sidorov, V. A.

TITLE: The SSK-1 mixing chamber to produce polyurithane foam

CITED SOURCE: Vestn. tekhn. i ekon. issled. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ty khim. i nef. prom-sti pri Gosplane SSSR, vyp. 7, 1963, 22-23

TOPIC TAGS: polyurithane foam, foam, foam plastic, plastic, foam rubber

TRANSLATION: The construction of the SSK-1 mixing chamber is described. Preliminary mixing in the chamber is done by spraying low viscosity products through special needle valves and final mixing is done with a cross shaped agitator. Designs of installations which provide two methods of producing polyurithane foam are given. Installation 1 produces 15 kilograms per minute of foam material for a velocity of rotation of the cross shaped agitator of 300-500 revolutions per minute. Two illustrations. By N. Milenina

DATE ACQ: 17Apr84

SUB CODE: MT

ENCL: 00

Card 1/1

SIDOROV, V.A.

Production and possible means of processing cymenes. Khim.  
prom. no.7:481-488 J1 '63. (MIRA 16:11)

TELEGIN, V.G.; SIDOROV, V.A.

Alkylation of toluene with acetylene in a reactor with a  
screened electric motor. Khim. prom. no.8:567-570 Ag '63.  
(MIRA 16:12)

L 23071-65 EWT(m)/EWI(j) Pq-l RM

ACCESSION NR: AR4048487

S/0081/64/000/013/8053/S053

SOURCE: Ref. zh. Khimiya, Abs. 135335

AUTHOR: Kochetkov, V. N.; Sidorov, V. A.; Morozova, N. V.

TITLE: A study of the effect of stabilizing additives on the aging, physicochemical and optical properties of a polyamide film

CITED SOURCE: Nauchno-Issled. tr. Vses. n.-i. in-t plenochn. materialov i 'iskusstv. kozhi, sb. 14, 1963, 92-110

TOPIC TAGS: polyamide film, polyamide light permeability, polyamide heat resistance, polymer film stability, stabilizing additive

TRANSLATION: The authors studied the effect of the addition of stabilizing additives ( $\text{CuSO}_4$ ,  $\text{CaHPO}_4$ ,  $\text{TiO}_2$ ,  $\beta$ -naphthol, phenol, diphenylguanidine, resorcinol, maleic anhydride, phenol-formaldehyde resin, etc.) on the physicochemical and optical properties of polyamide film. They found that the most effective stabilizers are  $\beta$ -naphthol and phenol-formaldehyde resin; the greatest heat resistance was produced by the addition of stabilizers in amounts of 0.25-1%.

Card 1/2

L 23071-65

ACCESSION NR: AR4048487

Addition of stabilizers decreased the light permeability of polyamide film only insignificantly; addition of KI and  $\beta$ -naphthol decreased the rate of thermo-oxidative degradation by 30-66%. Addition of stabilizers did not cause any difficulties in the manufacture of polyamide film. Yu. Lipatov

ASSOCIATION: None

SUB-CODE: MT

ENCL: 00

Card 2/2



TELEGIN, V.G.; SIDOROV, V.A.; KHARCHENKO, A.A.; ZHARKOVA, D.R.; TREYBSHO, Ye.I.

Obtaining ditolyl ethane. Nefteper. i neftekhim. no.1:  
34-39 '64. (MIRA 17:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhim-  
icheskikh protsessov, Leningrad.

ACCESSION NR: AP4033056

S/0147/64/000/001/0181/0186

AUTHOR: Sidorov, V. A.

TITLE: A vibration study of rods with apertures

SOURCE: IVUZ. Aviatzionnaya tekhnika, no. 1, 1964, 181-186

TOPIC TAGS: rod vibration, aircraft structure, aircraft vibration, vibration frequency, equivalent rod method, flexure, bending, rod aperture

ABSTRACT: Pointing out that many aircraft assemblies consist of parts with apertures and slots, the author notes that there is a lack of information in contemporary technical literature concerning the vibrations of such structures. The present paper presents a method for the calculation of the natural frequencies of the transverse vibrations of rods with apertures. The "equivalent rod" method is employed. The equivalent rod must have uniform strength along its entire length and the same frequency as the rod with apertures. Once the length of the equivalent rod is found, the following well-known simple formula can be used to determine its frequency

$$f = \frac{K_1^2}{2\pi \cdot L^2} \sqrt{\frac{E \cdot I}{\rho}}$$

Card 1/4

ACCESSION NR: AP4033056

The length of the equivalent rod is determined in two stages: first the length, equivalent to the section with apertures, is found and, then, the length of the equivalent rod (see Figure 1 of the Enclosure). Formulae are derived for the determination of the width of a rod section equivalent to the section with apertures, vibrating around the node (both in the case of  $n$  apertures of the same diameter, arranged in a section of length  $l$ , and in the case of apertures of various diameters). The derived expressions show that it is not the dimensions of the apertures, but their arrangement with respect to the node which exercises the greatest effect on this parameter (that is, on  $b'$  - the width of the equivalent rod section). During the vibration process, the rod section under consideration is subject to flexure. The author adduces formulas showing how to select a section length  $l'$  such that the section, with its former sectional profile ( $b \times h$ ) (where  $b$  and  $h$  are the width and height of the rod) will resist bending in the same way as the section of cross-section ( $b' \times h$ ) of length  $l$ . The method proposed for determining the frequencies of transverse rods with apertures is applicable to apertures of any form. A verification experiment was later performed which revealed the following details with respect to the nature of the influence of the disposition of the apertures on the change of natural frequencies: 1) the further from the nodal line the aperture is located, the greater will be the change of frequency; 2) apertures arranged on internal nodal lines have a negligible reducing effect on the natural frequencies; 3) apertures arranged on extreme nodal lines have no effect on the natural frequencies; 4) apertures arranged beyond the extreme nodal

Card 2/4

ACCESSION NR: AP4033056

lines increase the natural frequencies. Orig. art. has: 12 formulas, 2 tables, and 3 figures.

ASSOCIATION: None

SUBMITTED: 21Jun63

DATE ACQ: 11May64

ENCL: 01

SUB CODE: AS

NO REF SOV: 004

OTHER: 000

3/4

Card

ACCESSION NR: AP4033056

ENCLOSURE: 01



Fig. I. I and II - sequential positions of a rod at vibrations corresponding in the given case to a third frequency

card 4/4

s/0065/64/000/004/0003/0006

ACCESSION NR: AP4026847

AUTHOR: Telegin, V. G.; Sidorov, V. A.; Zharkova, D. R.; Biryukova, L. M.; Tokareva, A. A.

TITLE: Preparation of individual vinyltoluenes

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 4, 1964, 3-6

TOPIC TAGS: Vinyltoluene, preparation, synthesis, vinyltoluene isomer, separation, ethyltoluene, toluene ethylation, dehydrogenation, isomer separation, fractionation, dealkylation, cracking, disproportionation

ABSTRACT: The study was made to determine if it is possible to prepare individual vinyltoluenes or at least mixtures of the vinyltoluenes enriched in one of the isomers. Ethyltoluenes were made by continuous vapor phase ethylation of toluene with phosphoric acid catalyst. Since it is difficult to separate the dehydrogenation products of ethyltoluene, the ethyltoluenes were separated prior to dehydrogenation. The ortho isomer was fractionated and the remaining mixture of meta and para isomers was sulfonated and the ethyltoluene sulfo acids were hydrolyzed. The separated isomers were then dehydrogenated in the presence of water (water: hydrocarbon ratio of 22:1) at 580C at a flow rate of 0.75 hrs<sup>-1</sup> on a catalyst

Card 1/2

ACCESSION NR: AP4026847

comprising 87%  $\text{Fe}_2\text{O}_3$ , 8%  $\text{Cr}_2\text{O}_3$  and 5%  $\text{K}_2\text{O}$ . Based on ethyltoluene the yield was 94-96%; exhaust gases comprised 76-78%  $\text{H}_2$ , 19-21%  $\text{CO}_2$  and 2-4.6% hydrocarbons. Products were fractionated at 8 mm. Hg. The purest vinyltoluene isomer prepared was the ortho, containing 5-7% para-isomer. The other two isomers were contaminated with larger amounts of mixed isomers. In comparison to dehydrogenation of ethylbenzene, dehydrogenation of ethyltoluene is accompanied by undesirable dealkylation, cracking and disproportionation reactions, and the catalyst activity is rapidly lowered so it must be regenerated after each cycle. Further work is needed on the purification of the individual ethyltoluenes and on their dehydrogenation to obtain individual vinyltoluenes containing a minimum of contaminating isomers. Orig. art. has: 3 tables.

ASSOCIATION: VNIINeftekhim (All Union Scientific Research Institute of Petrochemical Processes)

SUBMITTED: 00

DATE ACQ: 28Apr64

ENCL: 00

SUB CODE: CH

No. REF. SOV: 005

OTHER: 007

Card 2/2

L 62504-65 EPF(c)/EWP(j)/EWT(m)/T WW/RM

ACCESSION NR: AR5011417

UR/0081/65/000/006/8072/8073

SOURCE: Ref. zh. Khimiya, Abs. 68490

AUTHOR: Sidorov, V. A.; Trosnan, G.M.; Aleksandrov, K.N.

TITLE: Self-extinguishing foam polyurethane

CITED SOURCE: Vestn. tekhn. i ekon. inform. N-1. in-t tekhn.-ekon. issled. Gos. kom-ta khim. prom-sti pri Gosplane SSSR, vyp. 7, 1964, 11

TOPIC TAGS: polyurethane, foam plastic, polyvinyl chloride, flammability

TRANSLATION: In order to reduce the inflammability of elastic foam polyurethane, up to 50% of polyvinylchloride was added to the mixture before adding the 2,4- and 2,6-isomers of toluylenediisocyanate. The introduction of polyvinylchloride imparts some of the foam polyurethane characteristics, such as ultimate tensile strength, melting point, elongation during the tensile test, and increased weight losses with heating. However, the foam polyurethane also acquires desirable properties (reduced inflammability, good weldability with hf current, and ease of molding into complex shapes). Z. Ivanova.

SUB CODE: MT, OC

ENCL: 00

Card 1/1 *mp*



L 55866-65 EWT(m)/EPF(a)/EWP(j)/T. Pc-l/Pr-l PM  
ACCESSION NR: AR501499:1 UR/0081/65/000/008/S067/S067

SOURCE: Ref. zh. Khimiya. Abs. 8S390

AUTHOR: Sidorov, V. A.; Trosman, G. M.; Rogov, V. M.; Aleksandrov, K. N.

TITLE: Improving the performance characteristics of PK-4 polyamide film

CITED SOURCE: Vestn. tekhn. i ekon. inform. N.-i in-t tekhn.-ekon. issled. Goskom-ta khim. prom-sti pri Gosplane SSSR, vyp. 7, 1964, 13-14

TOPIC TAGS: polyamide film, polymer film strength, polymer aging, stabilizer, protective coating, polyurethan lacquer, film transmittivity, phthalocyanin blue

TRANSLATION: To improve the performance characteristics of the PK-4 polyamide film (PF) in agricultural applications, stabilizing admixtures are added to the composition, such as aniline-phenol-formaldehyde resin (polyamide film of brand PF-4FF) or cresol; the PF is also coated with a protective layer of polyurethan lacquer (PUL) consisting of a mixture of glycerol toluylenediisocyanate, a polyester, chlorobenzene, and ethyl acetate. Accelerated aging of PF was studied under a PRK-4 lamp for 10 hr. It was found that the properties of PF of brand

Cord 1/2

L 55866-65

ACCESSION NR: AR5014993

PK-4FF and of brand PK-4 with PUL remain practically unchanged, and that the photometric qualities are even improved in PF of PK-4 brand with PUL. To achieve the maximum light-transmitting capacity in various portions of the solar spectrum, a test batch of PF of blue color was prepared which had a pronounced maximum in the 440-540 mμ region. Phthalocyanin blue pigment was introduced in the amount of 0.01% prior to the polycondensation. The PF obtained is now undergoing field tests. L. Kotlyarevskaya

SUB CODE: MT

ENCL: 00

Card

292  
2/2

L 46736-66 EWT(m)/EWP(v)/EWP(i)/T IJP(c) WW/RM  
ACC NR: AR6000275 (A) SOURCE CODE: UR/0081/65/000/014/S064/S064

AUTHORS: Sidorov, V. A.; Fefer, I. P.

TITLE: Napped rolls made of elastic polyurethane foam materials

SOURCE: Ref. zh. Khimiya, Abs. 14S396

REF SOURCE: Vestn. tekhn. i ekon. inform. n.-i. in-t tekhn-ekon. issled. Gos. kom-ta khim. prom-sti pri Gosplane SSSR, vyp. 11, 1964, 15-16

TOPIC TAGS: polyurethane, resin, epoxy <sup>plastic</sup>, foam plastic, adhesion, industrial ~~nitrite~~ nitrile rubber / MF-17 resin, ED-5 resin, E-40 epoxy ~~plastic~~, SKN-26 nitrile rubber

ABSTRACT: Experiments were conducted in the application of cotton nap on polyurethane foam roll in an electrostatic field. It was established that the quality of the produced material is determined by the nature of the adhesive, its application method, and the method of the subsequent thermal treatment. Satisfactory results were obtained with adhesives based on polyurethanes (PU), polyvinylacetate emulsion with addition of MF-17 and ED-5 resins. To decrease toxicity and to increase the stability of the adhesive based on PU, nitrile rubber, SKN-26, "Igelit" brand of polyvinyl chloride, was added to it. Compositions based on SKN-26 and phenolformaldehyde resins "Bakelit S" (40--60 parts by weight of resin per 100 parts by weight of rubber) were employed as well as a combination of the epoxy resin E-40 with SKN-26 (60:100 parts by

Card 1/2

L 46736-66

ACC NR: AR6000275

weight). Organic solvents (ethyl acetate, butyl acetate, etc) were used to decrease the viscosity of the adhesive compositions. The adhesive was applied using an impression method involving a printing roller and doctor knife. For the selected adhesives the thermal processing of the nap material should last 20--40 min at 120--140C. Produced nap based on PU will allow substitution of the scarce and expensive fabric employed in daily use in various industrial areas. Z. Ivanova [Translation of abstract]

SUB CODE: 11

Card

2/2 LC